

Beam separation apparatus for monostatic LIDARs

Abstract

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Monostatic LIDARs use the same telescope to send the laser beam in atmosphere and to collect the backscattered echo. An important element of monostatic LIDARs is the optical separator between the emission and reception paths of the laser beam. By using a system made by a Faraday rotator in combination with
10 two polarizing beam splitters suitably oriented, it is possible to achieve this separation with minimum losses with respect to prior systems using semi-reflective plates and/or polarizing beam splitters in conjunction with quarter-wave plates. The effectiveness of this system does not rely on the maintenance of the polarization status of the laser beam when backscattered by the atmosphere
15 molecules and particles, neither on the reduction of the received laser power relatively to the transmitted one. The system is simple, compact, and can work at several wavelengths of the laser source.